

USE OF PRESCRIBED FIRE TO CONTROL THE WHITE PINE CONE BEETLE
IN AN EASTERN WHITE PINE SEED ORCHARD

G. L. DeBarr
USDA Forest Service
Athens, Georgia

L. R. Barber
USDA Forest Service
Asheville, North Carolina

and

E. Manchester
USDA Forest Service
Murphy, North Carolina

The white pine cone beetle, Conophthorus coniperda (Schwarz), is one of the most destructive cone and seed insects in North America. Without insecticide application, losses of genetically improved seeds to this pest approach 100% in seed orchards of eastern white pine, Pinus strobus L. Studies in a seed orchard in Cherokee Co., North Carolina, during 1987 and 1988 evaluated the potential of prescribed fire as an alternative to insecticidal control. Four of eight 1-ha experimental plots, along with two large pilot test plots were burned on March 1-3, 1988. Before and after burning, samples of cones on the ground were used to estimate density and mortality of overwintering beetles. Barrier traps were used to monitor spring flight activity of the beetle. Cone attacks were monitored in sample trees in each plot throughout April and early May. Prescribed fire reduced numbers of live overwintering beetles by 99% in the four experimental plots and one pilot test plot. A 90% reduction occurred in the other pilot test plot. Significantly fewer beetles were trapped in burned than in unburned plots. During the first 4 weeks after beetle attacks began in April, there were significantly fewer cone beetle attacks on trees in burned plots than on those in unburned plots. At 6 weeks the difference was still large, but not statistically significant. Late attacks in burned plots appeared to be due to reinfestation from unburned areas of the orchard. Results of our study suggest that fire can be a practical, effective, and economical alternative to insecticides for control of C. coniperda in eastern white pine seed orchards.